AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Original): A method of establishing a path through a transport network, said network comprising a number of physically interconnected network elements (NEn-1, NEn, NEn-1); transmission signals being transported over physical connections between said network elements; each transmission signal being subdivided into frames of the same length, said frames being structured according to a multiplex hierarchy into multiplex units respectively representing paths through said network and repeating every frame thereby forming traffic streams multiplexed to form said transmission signals; said method comprising the steps of

- assigning each traffic stream an identifier called hereinafter a path tag which is sent in said traffic stream on a regular basis;
- providing forwarding information (FT) in each network element along said path to be established;
- receiving (a1) a new traffic stream at an input port (I1) of a network element (NEn);
- checking (a2) the path tag of the received traffic stream and determining (a3) an appropriate output port (O2) based on said path tag and the forwarding information (FT); and
- establishing (a4) an internal cross-connection between said input port (I1) and said previously determined output port (O2).

2. (Original): A method for establishing a restoration path according to claim 1, comprising the steps of

- detecting a failure of an already existing path at a first network element (NE1);
- at said first network element, crossconnecting the traffic stream affected by said failure to an alternate output port;
- at an input port of a second network element (NE5), connected to the alternate output port of the first network element (NE1), receiving said traffic stream;
- checking the path tag of the received traffic stream and determining an appropriate output port based on said path tag and the forwarding information of said second network element;
- establishing an internal cross-connection between said input port and said previously determined output port; and
- repeating said steps at preceding network elements along said restoration path.

3. (Original): A method according to claim 1, wherein said path tag is a trail trace identifier unambiguously assigned in said transport network.

4. (Original): A method according to claim 3, wherein said trail trace identifier is either a path trail trace identifier or a Tandem Connection trail trace identifier.

5. (Previously Presented): A method according to claim 1, wherein said path tag is a label which is inserted by the network element and which label will be replaced by the actual network element with a new label for the subsequent network element.

6. (Original): A network element (NEn) of a transport network; said network element comprising

- at least one input port (I1) designed for the reception of a transmission signal subdivided into frames of the same length, said frames being structured according to a multiplex hierarchy into multiplex units respectively representing paths through said network and repeating every frame thereby forming traffic streams multiplexed to form said transmission signals; wherein each traffic stream having an identifier assigned, which is called hereinafter a path tag and which is sent in said traffic stream on a regular basis;

- a low-level controller (CT1, CT2, CT3; SLC) controlling said input port (I1) and comprising a memory for storing forwarding information (FT) provided to said network element;

- a monitor (M1) assigned to said input port (I1) for checking the path tags of all traffic streams received at said input port and for determining whether any of said received path tags does not correspond to expected path tags and if so, for notifying the unexpected path tag to said low-level controller (CT1); and

- a crossconnect matrix (S) for crossconnecting any of said traffic streams from said input port (I1) to any of a number of output ports (O2) under the control of said low-level controller (CT2);

wherein said low-level controller (CT1, CT2, CT3) is adapted to determine an appropriate output port (O2) for a traffic stream with an unexpected path tag based on said path tag and said forwarding information (FT) and to configure said crossconnect matrix (S) to establish an internal cross-connection between said input port (I1) and said previously determined output port (O2).

7. (Original): A network element according to claim 6, further comprising a high-level controller (FLC) connected to said low level-controller (SLC), said high level controller comprising an abstraction of physical and logical resources of said network element for the purpose of network management and an interface to a network management facility (TMN); whereby said low-level controller (SLC) is adapted to determining an appropriate output port for a traffic stream with an unexpected path tag without involving said high-level controller (FLC).

8. (Original): A network element according to claim 6, wherein said low-level controller (SLC) is distributed among more than one shelves or on-board controllers in said network element.

9. (Original): A network management facility for controlling and configuring network elements of a transport network wherein transmission signals are transported over physical connections between said network elements; each transmission signal being subdivided into frames of the same length, said frames being structured according to a multiplex hierarchy into multiplex units respectively representing paths through said network and repeating every frame thereby forming traffic streams multiplexed to form said transmission signals; wherein each traffic stream is assigned an identifier called hereinafter a path tag; said network management facility being adapted and programmed to determine pre-calculated restoration paths for working paths being established in said network and to provide to said network elements forwarding information based on said path tags to allow said network elements to determine an appropriate output port for a traffic stream with an unexpected path tag received at

an input port by using said path tag and said forwarding information and to establish an internal cross-connection between said input port and said previously determined output port.

10. (Original): A network management facility according to claim 9, being further adapted and programmed

- to determine new restoration paths from remaining spare capacity in said network after receipt of a notification from a network element saying that a restoration path has been established and

to provide new forwarding information to said network elements.

11. (Previously Presented): A method according to claim 1, wherein checking the path tag of the received traffic stream includes monitoring for a mismatch between a received path tag and a configured path tag and determining the appropriate output port according thereto.

12. (Previously Presented): A method according to claim 11, wherein the mismatch triggers a table look-up in a forwarding table, and a re-routing.

13. (Previously Presented): A network management facility according to claim 10, wherein the new restoration paths are dynamically determined as the remaining spare capacity changes.

14. (Previously Presented): A method according to claim 1, wherein the path tag of a corresponding traffic stream is part of a plurality of multiplex units that represent the corresponding traffic stream.

15. (Previously Presented): A method according to claim 1, wherein the establishing the internal cross-connection is a self-routing mechanism.

16. (new): A method according to claim 1, wherein said multiplex units are virtual containers and each multiplex unit represents a path through said network and repeats every frame.

17. (new): A method according to claim 16, wherein said traffic stream is a sequence of a plurality of identical multiplex units and transports a tributary signal.

18. (new): A method according to claim 16, wherein said multiplex units carry tributary signals and are repeated within each successive frame in a same order.

19. (new): A method according to claim 1, wherein said path tag is unique for a specific physical link between two adjacent network elements, and said path tag is changed for each physical link along said path.

20. (new): A method according to claim 1, wherein said multiples units are outside a payload and are visible to a transport layer.

21. (new): A method according to claim 14, wherein said plurality of multiplex units are virtual containers and each multiplex unit of the plurality of multiplex units represents a path through said network and repeats every frame.

22. (new): A method according to claim 5, wherein said path tag is assigned within said traffic stream and is dynamically changed during a transmission of said traffic stream by said actual network element.

23. (new): A method according to claim 15, wherein each network element of said number of network elements performs a self-routing process by establishing said internal cross-connection independently from a previous network element.